



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,175	04/09/2004	Toru Noguchi	101074.53980US	8408
25944 7590 07/16/2007 OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER COLE, ELIZABETH M	
			ART UNIT 1771	PAPER NUMBER
			MAIL DATE 07/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,175

Applicant(s)

NOGUCHI ET AL.

Examiner

Elizabeth M. Cole

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 23-29 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/5/07</u> | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 1771

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10, 23-29 are rejected under 35 U.S.C. 103(a) as obvious over Fisher et al, U.S. Patent No. 6,203,814 in view of Brennan et al, U.S. Patent NO. 5,844,523. Fisher discloses a composite material comprising carbon nanofibers having a diameter of less than 0.5u, (col. 4, lines 45-46), which can be dispersed in an elastomer such as natural rubber, styrene-butadiene rubber or polybutadiene, (col. 7, lines 1-9). Since the elastomers disclosed comprise an unsaturated bond or group, the elastomers would necessarily have the claimed affinity to the carbon nanofibers and the claimed molecular weights. Fisher discloses that there is an affinity between the nanofibers and the elastomers. See abstract. Fisher does not disclose the claimed spin-spin relaxation time of the network components as measured by the Hahn-echo method using pulsed NMR techniques, however, since the same materials are employed and the same results are obtained, it is reasonable to presume that the materials of Fisher would have the claimed spin-spin relaxation time. The elastomer is not disclosed as being crosslinked or uncrosslinked, but instead the reference is silent as to this feature. Brennan et al teaches that elastomers such as rubbers into which filler such as fibers can be dispersed can be either crosslinked or uncrosslinked. See col. 7, line 65 – col.

Art Unit: 1771

8, line 10. Therefore, since Fisher et al is silent as to whether crosslinked or uncrosslinked elastomers are employed and Brennan teaches that both crosslinked and uncrosslinked elastomers are suitable for use to form composite materials into which fillers such as fibers are mixed, one of ordinary skill in the art at the time the invention was made would have been motivated to have employed either crosslinked or uncrosslinked elastomers as the elastomer resin component taught by Fisher et al because Brennan et al teaches that both types of elastomers can be used in such composite materials. With regard to the amendment reciting that the fibers are substantially uniformly dispersed, Fisher teaches at col. 7, lines 10-18 that carbon fibers are easily dispersed in the elastomer composition.

3. Applicant's arguments filed 5/3/07 have been fully considered but they are not persuasive. Applicant's arguments are sufficient to overcome the 112 1st paragraph rejection. Specifically, since the specification teaches that the fibers are homogeneously dispersed, the limitation that the fibers are substantially uniformly dispersed has support in the specification.

4. With regard to the art rejection over Fisher, Applicant argues that it is impossible based on the disclosure of Fisher to arrive at the claimed substantial uniform dispersal of carbon nanofibers as a solution to the problem of nanofibril aggregation based on blinded uncertain use of similar materials and that the results are simply not true. Applicant argues that Fisher does not teach or suggest homogeneous dispersal and that the office action erroneously states that Fisher teaches at column 7, lines 10-18 that carbon fibers are easily dispersed in the elastomer composition. However, initially,

Art Unit: 1771

it is noted that it is not necessary for Fisher to suggest a solution to the problem of nanofibril aggregation, as long as the structure of the Fisher material is the same as the claimed structure. Fisher teaches the same types and sizes of fibers and teaches dispersing them in an elastomer. The instant specification at page 2 teaches that the uniform dispersal of the fibers is due to the bonding of the unsaturated bond or group of the elastomer with an active part of the carbon nanofiber, which weakens the aggregating force of the carbon nanofiber and enables enhances of its dispersibility and that as a result of this the material can have a structure wherein the carbon nanofiber is homogeneously dispersed into the elastomer. See specification, at lines 12-21. Since Fisher teaches the same materials it is reasonable to presume that the fibers and elastomer would have the same affinity and bonding and would likewise result in a homogeneous dispersion of the fibers of Fisher in the elastomer. Further, it is noted that Fisher states at col.7, lines 10-18 that the fibers are easily dispersed in the elastomer. Applicant argues that disperse simply means to drive off or scatter in different directions. However, the fibers are not driven off or scattered but disclosed as being easily dispersed in the elastomer composition. Since the fibers are dispersed they are separated uniformly throughout the elastomer. See definition 4 of dispersed at dictionary.com, which relates to the definition of dispersed with regard to physical chemistry.

5. With regard to the test data submitted, the data has been carefully considered. However, it is noted that it is not in the form of a declaration, it does not compare the claimed invention to the closest prior art, Fisher, it is not commensurate in scope with

Art Unit: 1771

the claims and it does not address the issue of how much the affinity of the fibers with the elastomer impacts the dispersion of the fibers. Therefore the rejection is maintained.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth M. Cole whose telephone number is (571) 272-1475. The examiner may be reached between 6:30 AM and 6:00 PM Monday through Wednesday, and 6:30 AM and 2 PM on Thursday.

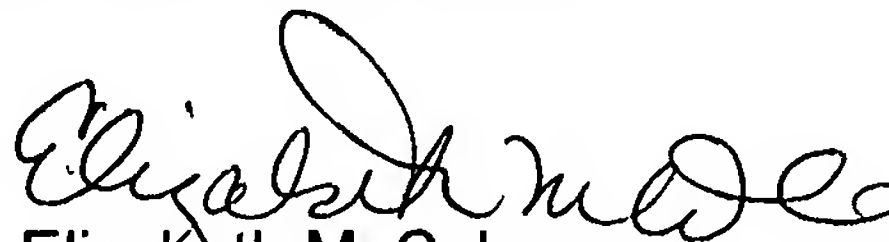
Mr. Terrel Morris, the examiner's supervisor, may be reached at (571) 272-1478.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 1771

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

The fax number for all official faxes is (571) 273-8300.



Elizabeth M. Cole
Primary Examiner
Art Unit 1771

e.m.c